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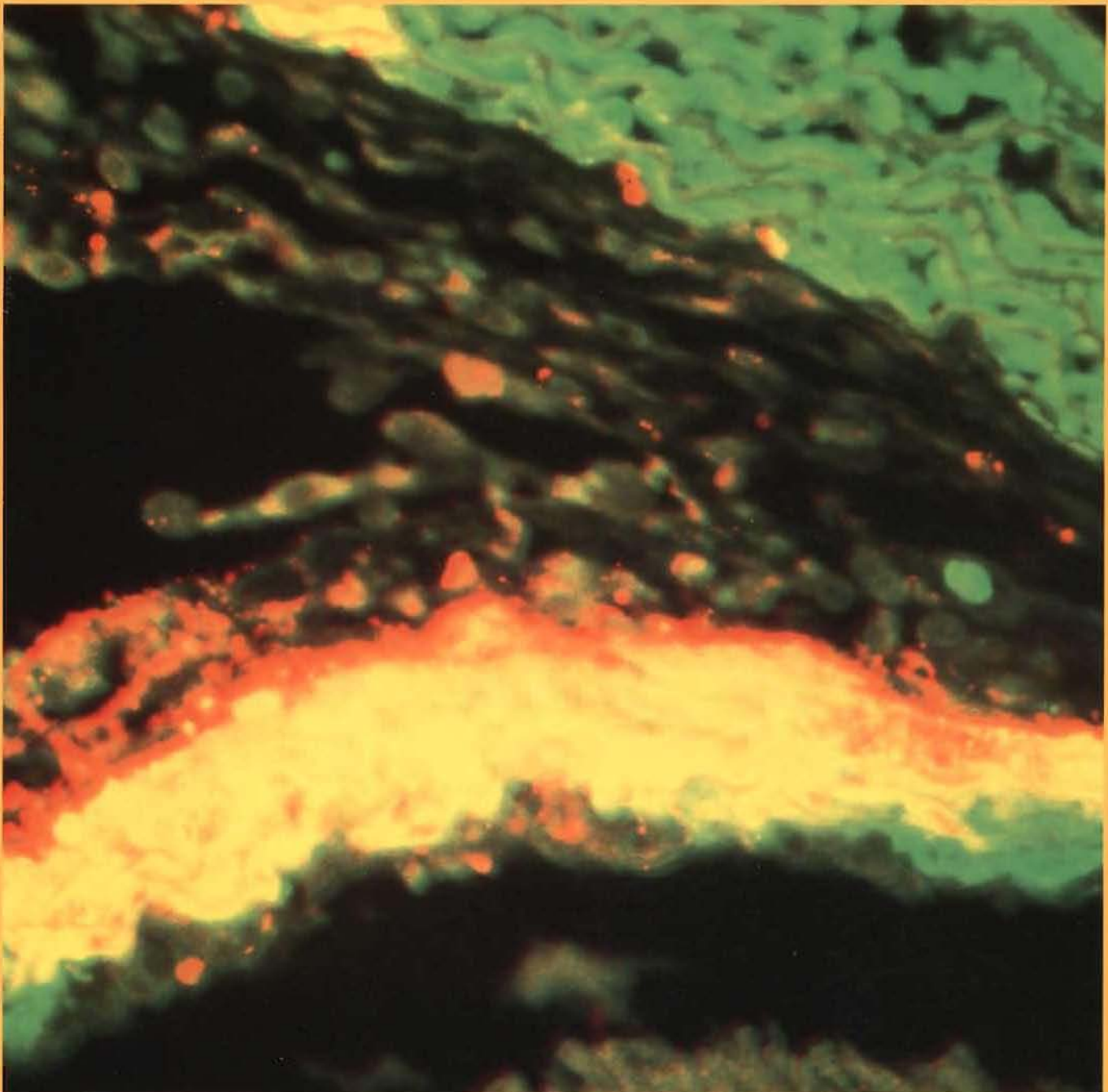
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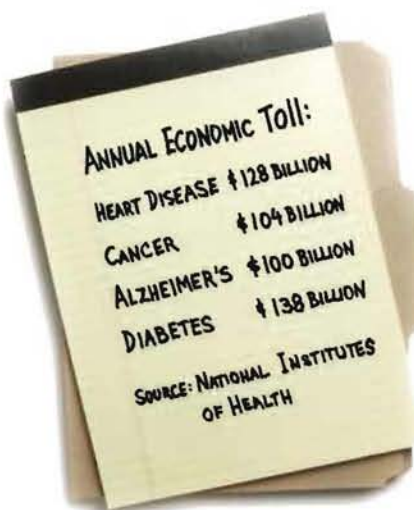
Washington University School of Medicine

Summer 1998



Community Clinic • Combating Microbes • Organ Transplant

WE'RE FINDING TOMORROW'S CURES. TODAY.



Investing in Cures Will Really Pay Off.

Every year, illness takes a staggering toll on America. But thanks to research conducted by America's medical schools and teaching hospitals — with support from the National Institutes of Health (NIH) — there's some good news. Powerful new treatments and cures are within reach if we only pick up the pace of investment in medical research.

The effort underway in Congress to increase the NIH research budget will yield enormous dividends for you and your

family by dramatically speeding the discovery of treatments and cures for diseases such as cancer, heart disease, stroke, Alzheimer's, diabetes, and many others.

Medical schools and teaching hospitals, which conduct more than 50 percent of all NIH-sponsored research, are where these breakthroughs will "break through."

**Invest in the future of America's health.
Support more funding for NIH research.**



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www.researchamerica.org
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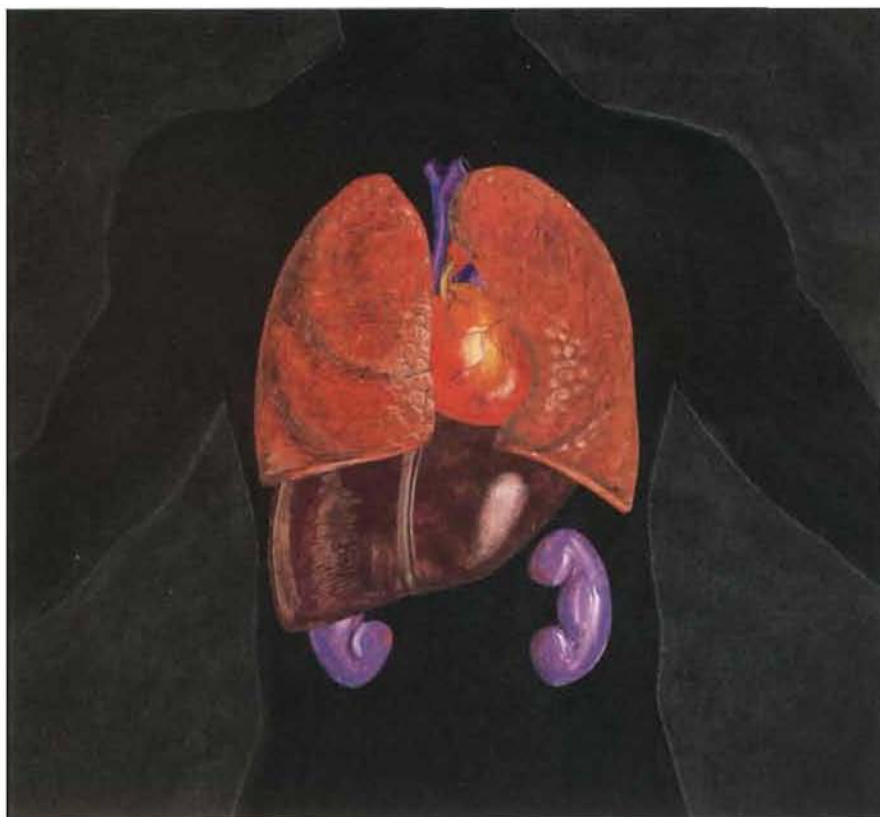
C I R C U L A T I O N

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THE COVER

The image shows a section of an artery from a mouse infected with γ -herpesvirus 68. The immunohistochemical stains have colored proteins of the virus red and a muscle protein in the artery wall green. The yellow regions reveal where the virus and muscle protein overlap. Researchers here were the first to discover that murine γ -herpesvirus 68, a close relative of the Epstein-Barr virus that causes mononucleosis and Kaposi's sarcoma herpesvirus, can trigger disease of the great blood vessels. For more, see page 16.

With permission of Nature Medicine



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After one year, the student-run clinic in the Forest Park Southeast neighborhood is benefiting students, faculty and the community it serves.

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Disease-causing microbes are meeting their match at the School of Medicine, where scientists are revving up the fight against them.

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The Program in Occupational Therapy provides a link to productive living through the basic, clinical, social and applied sciences.

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Holtzman Becomes Journal Editor-In-Chief

MICHAEL J. Holtzman, MD, the Selma and Herman Seldin Professor of Medicine in Pulmonary Diseases, has been



Michael J. Holtzman, MD

named editor-in-chief of *The American Journal of Respiratory Cell and Molecular Biology*.

Holtzman, who directs the division of pulmonary and critical care medicine, has served as associate editor of the journal since 1992. He was named editor after an international search involving 32 candidates.

The journal joins several others — including *Immunity*, *The Journal of Vascular and Interventional Radiology*, *The Annals of Thoracic Surgery*, *Neurobiology of Disease* and *Kidney International* — whose editorial offices are located at the School of Medicine.

As editor, Holtzman will appoint a deputy editor and direct 14 associate editors, a 30-member editorial board and a publications staff, located in Chicago. His primary job is to oversee and streamline the journal's peer-review process.

The journal is published by the 12,000-member American Thoracic Society, which is the medical section of the New York City-based American Lung Association (ALA). The ALA produces two other journals: *American Thoracic Society News* and *The American Journal of Respiratory and Critical Care Medicine*. ●

Sicard To Head Division Of General Surgery

GREGORIO A. Sicard, MD, has been named head of the division of general surgery.

He succeeds Samuel A. Wells Jr., MD, professor and former head of the Department of Surgery, who now directs the 63,000-member American College of Surgeons, the largest surgical organization in the world.

Sicard, who will continue in his role as professor of surgery and director of the vascular service at Barnes-Jewish Hospital, becomes head of all surgical sections within general surgery: burn trauma and surgical critical care, colon and rectal, hepatobiliary/pancreatic, oncology/endocrinology, transplantation and vascular.

Sicard is a vascular surgeon who

is well known for his expertise in minimally invasive vascular reconstruction and in repair of aortic aneurysms. His most recent clinical research has involved autologous vein reconstruction in prosthetic graft infections.

In 1996, a special edition of *American Health* named Sicard as one of the nation's top doctors. ●

Owens Receives Honors

WILLIAM D. Owens, MD, professor of anesthesiology, has been elected president of the American Society of Anesthesiologists (ASA), the largest organization of anesthesiologists in the world.

As president of ASA, which has more than 34,000 members, Owens will lead efforts to carry out policies adopted by the association, including lobbying to clarify Medicare reimbursements to better define the role of nurse anesthetists.

Owens joined the faculty at the School of Medicine in 1973. He served as acting chair of the Department of Anesthesiology from 1982 to 1984, and as chair from

1984 to 1992. During this time, he increased his involvement in the ASA at the national level, where he served as first vice president and chair of numerous committees.

The School of Medicine also recently honored Owens by establishing the William D. Owens Anesthesiology Research Fellowship Fund, which will provide financial support to train qualified anesthesiologists in the rigors of modern scientific methods.

Though Owens is not a researcher, during his tenure as department head he recruited outstanding faculty and built a basic science research program from the ground up. Today, the



William D. Owens, MD

Anesthesiology Research Unit, the research component of the department, is one of a handful of major centers for fundamental anesthesia research in the United States. ●

Zorumski Named Guze Professor Of Psychiatry

CHARLES F. Zorumski, MD, head of the Department of Psychiatry and psychiatrist-in-chief at Barnes-Jewish and St. Louis Children's hospitals, has been named the Samuel B. Guze Professor of Psychiatry.

Zorumski, a professor of psychiatry and neurobiology, is a renowned expert on depression and its treatment. In clinical research, he examines the safety and effectiveness of electroconvulsive therapy (ECT) in patients with psychiatric disorders.

Zorumski says research like his would not be possible without the work of Samuel Guze, the late Eli Robins, MD, and others who pioneered Washington University's biological approach to mental illness.

Guze, the Spencer T. Olin Professor and former head of

psychiatry, has a long history with the School of Medicine. A graduate of the class of 1945, he headed the



Charles F. Zorumski, MD

Department of Psychiatry from 1975 until 1989 and again from 1993 to 1997. He also served as vice chancellor for medical affairs and

president of Washington University Medical Center from 1971 to 1989.

In the 1960s and 1970s, Guze was responsible for helping Washington University's biological approach to psychiatric illness gain acceptance in the medical community. Guze and colleagues believed that mental illness should be diagnosed according to specific symptoms. They helped create the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, first published in 1980. Guze's research on alcoholism, criminal behavior, hysteria and schizophrenia spawned great interest in the genetics of psychiatric disorders. In addition, it helped make brain research central to the department's mission. ●

Mohanakumar Honored With Named Professorship

THALACHALLOUR Mohanakumar, PhD, has been named to a new chair, the Jacqueline G. and William E. Maritz Chair in Immunology and Oncology in the Department of Surgery at Barnes-Jewish Hospital and Washington University School of Medicine.

The chair was established through a gift to the Barnes-Jewish Hospital Foundation from Jacqueline G. and William E. Maritz, chief

executive officer of Maritz, Inc., and a longtime community leader. They wished to honor the work of Joel D. Cooper, MD, the Evarts A. Graham Professor of Surgery and head of the division of cardiothoracic surgery at the School of Medicine, who is an internationally recognized pioneer in lung surgery, and Shabbir H. Safdar, MD, professor of medicine, a longtime area physician who specializes in hematology and oncology.

Mohanakumar is the principal

investigator on four separate research grants from the National Institutes of Health (NIH). His current research focuses on the structure and function of peptides and their possible role in preventing organ rejection, particularly in kidney and lung transplants. He also is working to define the human immune responses to pig organs, which are being considered as transplant options for people, since suitable human organs are in short supply. ●

Neurology Resident's Research Recognized

SENIOR neurology resident Gabriel A. de Erausquin, MD, PhD, has been awarded the S. Weir Mitchell Award by the Auxiliary to the American Academy of Neurology. The award, presented in May, honors physicians in clinical neurology training programs for basic neuroscience research.

de Erausquin is honored for his work on embryonic cells that can be transplanted into the brains of

Parkinson patients. When such cells survive and mature, they make dopamine, the chemical messenger that is depleted in this disorder. To date, transplants have survived only for brief periods.

By culturing these cells, de Erausquin discovered that they are unusually sensitive to compounds that resemble glutamate, the most common chemical messenger in the brain. The research suggests that embryonic

transplants might succeed if glutamate effects could be prevented.

"Our findings reveal possible targets for therapeutic intervention," de Erausquin says. "If the same events happen in the intact brain, this information could be brought to bear on the prevention of transplant attrition."

de Erausquin works in the laboratory of Mark P. Goldberg, MD, assistant professor of neurology. ●

Cool Head, Warm Heart

by Steve Kohler

AT his former general practice in Boston, Peter L. Slavin, MD, MBA, always took time to evaluate the mental state of his medical patients. Aware that mental illness — especially depression — is underdiagnosed by general practitioners, he saw how it sometimes interfered with effective treatment and added to costs.

The end result of that awareness, funneled through Slavin's predisposition for action, is the recent McGraw-Hill book, *The MGH Guide to Psychiatry in Primary Care*. Edited by Slavin and two Harvard psychiatrists, it is designed, Slavin says, "to help primary care physicians recognize and diagnose mental illness early, so they can provide better care, and patients and insurers can spend less."

"I'm not sure how the book is selling," he says, "but I'm not holding my breath for the royalty check." Clearly not. Relocated to St. Louis and installed in the offices of president of Barnes-Jewish Hospital and senior executive officer, central region, BJC Health System, in a few short months, Slavin has larger issues before him. His central problem-solving approach, however, remains the same.

Trained as both physician and MBA, Slavin says his dual personae allow him to "speak with physicians



Peter L. Slavin, MD, MBA, president of Barnes-Jewish Hospital and senior executive officer, central region, BJC Health System.

in physician-talk and with managers in manager-talk. The potential value of doing that is what attracted me to the field of health care management."

He considers the training and the approach for both physician and manager to be largely similar — outside of the jargon, perhaps. "The MD first looks at a patient's problem from the vantage point of organ systems. The aim is a reasoned

understanding of the problem," he says. "A manager, presented with an issue, also diagnoses and treats, though the equivalent of the various organ systems are finance, organizational structure, and the like.

"When physicians and managers don't see the similarity is when we have problems," Slavin says. On the occasions when misunderstandings arise, "Managers may have a hard time dealing with specific 'patients,' because they concentrate on the organization. MDs may have trouble seeing the organization, because they focus on individual patients."

Looking ahead at his task of bringing physicians and managers together to confront a shifting health care environment, Slavin has a goal for Barnes-Jewish Hospital: To be widely recognized in the region as the medical center with the best care. He says, "By best, I mean

the most technically sophisticated, compassionate and user friendly."

His sense, he says, is that Barnes-Jewish now is regarded as the best technically, but also sometimes as a large and confusing place that is not as friendly as some others. "That presents opportunities to improve. There's no reason we can't excel on all fronts. We can and should do better."

Toward those ends, one initiative is the campus integration project. "In three years," Slavin says, "it will be much easier to find your doctor's office here. Cancer patients who now must piece together their own care will visit the Cancer Center to see physicians from all appropriate disciplines. We will be much more coherent."

He also has kicked off "Barnes-Jewish Hospital Cares," a program designed to focus the entire organization on its central mission: Service to the Patient. Co-led by Ira Kodner, MD, professor of surgery, Barnes-Jewish Hospital Cares officially began on April 24, with an all-managers meeting in the Eric P. Newman Education Center.

By any measure, it was a remarkable meeting. The nearly 450 in attendance had been asked to prepare in part by reading articles about how health care providers had changed the lives of patients for the better. One story, published in the *Boston Globe*, was penned by Ken Schwartz, an attorney friend of Slavin's, who, though he eventually succumbed to lung cancer, was lifted during the last stages of his life by those who cared for him.

A video Schwartz had made about his illness, care and impending death moved many in the group to tears. Slavin called Barnes-Jewish Hospital Cares the "key priority of management," and said that he personally intended to spend more time on the initiative than on any other.

Kodner says Slavin's emphasis on compassion and caring for the patient is "a dream come true. From the point of view of the physician, it is exciting to have a physician at the helm, someone who has walked the road, a kindred spirit. In Peter Slavin, we have a leader who is of

similar heart and similar mind."

Slavin explains the philosophy behind Barnes-Jewish Hospital Cares: "Most of us got into health care for passionate reasons. And we've taken a few hits lately. My goal is to reawaken the passion, improve morale and get people's juices flowing again. You know, despite all of the changes we've seen and those yet to come, not much that is truly fundamental about health care has changed. At heart,

"At heart, our obligation is to meet people's needs in a caring way. That hasn't changed since the Hippocratic Oath was written."

our obligation is to meet people's needs in a caring way. That hasn't changed since the Hippocratic Oath was written."

In Slavin's view, revitalizing the staff is the right and the important thing to do. Fortunately, it also advances business interests. "The one item most predictive of patient satisfaction is the caring expressed by the staff," he says. So the re-energizing of passion supports both halves of Slavin's rule of thumb that the hospital must be managed "with a cool head and a warm heart," a phrase loaned to him by William H. Danforth, MD.

For the cool-headed part of the vision, Slavin sees a clear need to improve hospital processes, reduce patient waiting times, coordinate services more effectively, make signs more instructive and confront other, similar issues.

Beyond the call for immediate improvements, he hesitates to be too specific about future directions. "Our challenges will continue to

evolve, and we can't really predict them. So we need to have our moral compasses set to guide us through any challenge," he says. "If we are dedicated to being a world-class medical center with clinical, teaching and research programs; if we are committed to addressing the health care needs of the people of the community, that will see us through."

The mistake that Slavin sees other, similar institutions making is their apparent disregard for what he

calls, "the sacred aspects" of a health care provider's work. "In many hospital improvement efforts, you could

just as easily be looking at an airline or a restaurant," he says.

For him, health care

is fundamentally different from other endeavors. He wants Barnes-Jewish and its people to benefit from the energy and passion that derives from work that is dedicated to the well-being of others.

Back in Boston, he saw the need for primary care physicians to be better informed about the mental states of their patients, and therefore he collaborated on the book. Since November of 1997, he has assessed the issues of the hospital. Having diagnosed the patient, Slavin the physician/manager is preparing his treatment.

A clue to how that treatment may progress is in plain view on the wall behind Slavin's desk, above his head as he works. It is a framed poster of the ubiquitous Nike slogan: "Just Do It." An uncomplicated statement, Slavin says it appeals to him particularly because too many managers overanalyze, and the motto says "don't decide; take action. Take risks. Then learn from your successes and from your mistakes." ●

Residents Tackle Teen Smoking With Essay Contest

A GROUP of medical residents at Washington University is extending a hand to help make St. Louis a better place to live.

The internal medicine residents are participating in a nationwide anti-smoking essay contest for middle school students sponsored by the American Medical Association Resident Physicians Section (AMA-RPS). This section of the AMA represents more than 35,000 residents and fellows from all medical specialties, making it the largest group of resident and fellow physicians in the United States. In Missouri, more than 800 sixth-through eighth-graders from throughout the state submitted essays, poems and short stories for the contest.

"We're very excited about this program," says Mary Mason, MD, national co-chairman for the AMA-RPS essay contest and chief resident for the internal medicine primary care track at Washington University. "A vital part of being a primary care physician is reaching out to your community and making it a better place. Community service projects like the essay contest greatly enhance our primary care education."

The title for the event was "Smoking Is Not For Me," and it is part of an overall campaign by the AMA-RPS to combat the problem of smoking among children and teens, according to Mason.

Mason and four other Washington University primary care

residents judged 820 essays submitted by Missouri students. The state winner, John McCutcheon, was an eighth grade student at Wydown Middle School in Clayton. His entry was sent to the national contest.

The residents also visited after-school programs in the Jennings and Ferguson-Florissant school districts and talked with a teen group at a St. Louis YMCA about the dangers of smoking.

Mason says a program is being implemented that will allow primary care residents to take part in various community projects such as educating St. Louis teens about health issues. ●

A Fitting Tribute



John M. Fredrickson, MD, PhD, professor of otolaryngology, was honored with a reception and a portrait on March 31 as he stepped down as head of the Department of Otolaryngology. Here, Fredrickson visits with W. Patrick Schuchard, E. Desmond Lee Professor for Community Collaboration in the School of Art on the Hilltop Campus. Schuchard was commissioned to paint the portrait of Fredrickson, which now hangs in the administration area of the Department of Otolaryngology on the ninth floor of McMillan Hospital. Fredrickson, who served as head of otolaryngology for 15 years, is now focusing on his research.

HAP Launches Campaign

IN recognition of its 50th graduating class and the change in leadership it will soon undergo, the alumni association of the School of Medicine's Health Administration Program (HAP) has launched an endowment campaign.

The permanent named fund will carry the names of Frank Bradley, MD, founder of HAP, and James O. Hepner, PhD, HAP program director and professor for the past 31 years. Hepner retired from his administrative post on June 30, but will serve as interim director until a successor is named.

Campaign officials say they hope to raise the endowment amount required by Washington University Trustees for a professorship (\$1.5 million). If a lesser amount is raised, the endowed fund still will be reserved for the new HAP director, and will carry the names of Bradley and Hepner.

Dan S. Wilford, MHA '66, and Harper S. Jackson, MHA '79, are heading the campaign. ●

Mr. Ples Blows Big Brain Theory

MR. PLES, a relative of early humans, didn't have such a big brain after all, a new study reveals. The results, which made the June 12 cover story of *Science*, throw a wrench into ideas about brain evolution.

"This paper implies that something is very wrong with previous interpretations of early hominid brain capacity," says lead author Glenn C. Conroy, PhD, professor of anatomy and anthropology at Washington University. "Hopefully, it will launch more exact studies of other specimens."

The skull of Mr. Ples, found by Alun Hughes and Phillip Tobias in South Africa in 1989, is 2.6 to 2.8 million years old and is thought to have belonged to an australopithecine. These human-like creatures walked on two legs, ate tough vegetation, made primitive chopping tools and lived in a well-wooded, wetter Africa from about 3.5 million to 2.5 million years ago.

Conroy and colleagues named the fossil Mr. Ples because it came



Glenn C. Conroy, PhD, holds a plaster model of Mr. Ples.

from Sterkfontein, the same site as Mrs. Ples, the first virtually complete adult australopithecine skull. Mr. Ples' skull is well-preserved on one side but partly open on the other. It earlier was thought to have a brain capacity of more than 600 cc — about two and a half cups of water. "Such a large brain would be

quite extraordinary because all of the other *Australopithecus africanus* brains are in the mid-400 cc range," Conroy says.

Using a computed tomography scanner, Conroy made a virtual cast of Mr. Ples' skull. Analyzing every slice of the 3-D image, he calculated a brain size in the low-500s.

A group of collaborators in Austria made a real 3-D model as well as a virtual model from Conroy's data. Their calculations matched those of Conroy. Mr. Ples' skull had a capacity of about 515 cc, the collaborators concluded.

Although the new study provides more questions than answers, it points to three important conclusions, researchers say. "First of all, there is no evidence that any australopithecine had a brain capacity anywhere near 600 cc," Conroy says. "Second, some estimates of brain size in early hominids may be too high. And third, 3-D digital models provide a very accurate way of determining how much brain there was inside a fossilized skull." ●

Newer Isn't Always Better When Combating High Blood Pressure

PHYSICIANS use a small arsenal of newer drugs — including calcium channel blockers, ACE inhibitors and alpha-blockers — to lower high blood pressure. But the results of a study published in the March issue of *Hypertension* show that two older, less expensive types of drugs, diuretics and beta-blockers, may lower blood pressure even better.

"The regimens of diuretic or diuretic plus beta-blocker gave the lowest average pressures and calcium channel blockers the highest," says H. Mitchell Perry Jr., MD, professor emeritus of medicine and Physician Coordinator for Hypertension for the U.S. Department of Veterans Affairs. "There is a big difference in

regimen efficacy, and it is statistically significant even after we correct for age, race and geographic region."

The study, coordinated by Perry, analyzed data from 6,100 veterans treated at six Hypertension Screening and Treatment Program (HSTP) clinics of the U. S. Department of Veterans Affairs.

The 46-month hypertension study relied on "real-world" data collected from clinicians who were primarily interested in treating patients and trying to find the medical regimen that would most effectively bring down blood pressure with a minimum of adverse effects.

Some patients were taking no antihypertensive drug, while others

were taking one or more drugs from the list of common agents: diuretics, beta-blockers, ACE inhibitors, calcium channel blockers or sympatholytic agents that were not beta-blockers. Some 54 percent took a diuretic, most commonly hydrochlorothiazide, and 33 percent took a calcium channel blocker, most often verapamil.

Researchers from the VA Coordinating Center in Perry Point MD divided these regimens into 12 categories and analyzed them. The results were decisive: the regimens of diuretic or diuretic plus beta-blocker produced the lowest average pressures (140.1/81.9 mm. Hg) and calcium antagonists the highest (149.0/86.5 mm. Hg). ●



For A Common Cause

**Student-Run Health Center Benefits Students,
Faculty And Community** by Kleila Carlson

Photos by Tim Parker

M

ichael Wei hasn't even made it to the front door of the Saturday Neighborhood Health

Center when a man walking by sticks out his arm to ask his opinion about a patch of red spots on his right hand.

"Think I might need an antibiotic for this?" the man asks, as Wei, wearing a white lab coat and medical school name badge, looks at the man's hand and inquires about when the condition appeared and how he has been treating it.

Such encounters are commonplace for medical students like Wei, who volunteer Saturday mornings at the free, student-run, walk-in health center housed at the Forest Park Southeast Family Care Health Center at 4352 Manchester.

In operation for more than a year, the Saturday Neighborhood Health Center was proposed and launched by a cluster of medical students from the class of 1999 — one of whom was Wei — interested in providing health care to the uninsured. With the help of students from the George Warren Brown School of Social Work on the Hilltop Campus, patients also are linked with other services, such as Medicaid, job placement and temporary shelters.

"It's great to provide a service for patients who are uninsured or who don't have access to health care," says Wei, who is a student in Washington University's Medical Scientist Training Program. "We provide episodic care and also try and plug patients into the health care system so they can receive follow-up care."

The student-run health center has full access to all diagnostic equipment and laboratory procedures used at the Family Care Health Center during the week. In its first year, students saw 165 patients — most of whom live in the Forest Park Southeast neighborhood — and 94 received medical treatment. The patient population is diverse, with about 60 percent African American and 25 percent Caucasian. The remainder includes Asian-Americans, Native

Americans, and recent Bosnian and Vietnamese immigrants.

On this sunny Saturday in mid-May, two teams of medical students and a medical student coordinator are assisting physician Michele Woodley, a gastroenterologist who is in private practice at Missouri Baptist Hospital, part of the BJC Health System, and St. Luke's Hospital. School of Medicine faculty and attending physicians like Woodley volunteer to rotate through the health center to work with the students and patients.

Inside the health center, third-year medical student Patrick Yue gives pointers to Belinda Blood, a first-year medical student who is learning to accurately describe disease symptoms and take a medical history. Yue and Blood are working with a patient who is experiencing wrist pain and inflammation after having taken a prescribed course of antibiotics for gonorrhea.

"The whole process of seeing a patient and trying to figure out what kind of disease processes are going on can oftentimes be very confusing," says Yue, who pauses to listen as Blood recounts possible contributing factors to their patient's symptoms. Suddenly, Yue's hands go up. Blood has just said "median nerve."

"That should send off all kinds of bells and whistles," he tells her, "such as the possibility of carpal tunnel syndrome."

"I've been volunteering here since last July," Yue continues. "I've made the transition from being the one who takes the history to the one who conducts the physical examination and helps the pre-clinical student with useful little pearls I've picked up along the way."

Teaching — between students, faculty and students, and faculty, students and patients — is a focus of the health center, says Woodley, who sits amidst a pile of patient charts,

stethoscope around her neck, in a conference room of the health center.

"There's teaching going on and we have a lot of fun while we're learning," she says. "Everyone gets so much out of it and it doesn't take that much to really help these people. I think the patients help us more than we help them."

As Yue and Blood hone their notes to present to Woodley, third-year medical student Amanda Cashen appears from an exam room.

Cashen and teammate Tess Chapman, also a third-year student, are called to attend to a 38-year-old Bosnian woman, who was directed to the student-run health center by Catholic Charities. The woman, a dark, draped form, sits with her back to the open door of the exam room. Her hands are cupped in her lap.

She has just arrived in the United States and speaks no English.

Language barriers are not uncommon at the health center, but unlike most Saturdays, there is a translator working in medical records here today to assist the students in communicating with their patient.

Through the translator, the students learn that the woman experiences severe headaches that last

for up to three days, and for several days after she does not feel herself. She gently presses her fingertips to her temples to point out where the pain occurs.

The headaches are not new, the students discover, and the woman has been taking prescription headache medication up to this time. Cashen and Chapman suspect the woman suffers from migraines. They review the case with Woodley, who concurs. They provide her with samples of a migraine medication to



Amanda Cashen



Patrick Yue

supplement what she already takes, and give her a prescription voucher that will allow her to get free medications at a local pharmacy.

To ensure her continued care, Allison LaMont, a first-year master's social work student, helps the woman apply for temporary Medicaid, which requires a 45-day wait for all those new to the United States. LaMont, who meets with all of the patients who come into the health center, says some of the immigrants who come in can't afford a delay.

"One Bosnian couple I saw came in for an initial assessment and we found out the woman was pregnant," says LaMont. "We had to get her into a program right away; we couldn't wait 45 days to start prenatal care."

LaMont recruits patients seen at the student-run health center into Healthcare For The Homeless, a 12-month program for individuals who are homeless or at risk for losing their home. The free program offers primary, preventive health care at Family Care Health Center, and includes dental care, optometry and prescriptions.

"It helps them get back on their feet," she says. She relates the story of an abused and unemployed woman she saw recently who was just about to start a job, but had been diagnosed with hypertension during the physical her new employer required. The woman was told she could not begin work until her chronic condition was under control.

"If she's not employed and doesn't have health insurance, how is she supposed to get the condition under control?" asks LaMont. "We were able to get her into the program, and it was really exciting

because it set her off and running."

LaMont's enthusiasm for the health center is shared by medical students and faculty.

"I just can't imagine where else I could find such an opportunity," says first-year medical student Michael Lamb, student coordinator. "It's sort of a micro-environment to learn just about whatever it is you want to do, whether it's physical exams, history-taking or even paperwork. I've picked up some really interesting pieces of medical knowledge here that I don't think I would have gotten until my third year of clinical rotations."

Thomas De Fer, MD, director of the medical school's Ambulatory Care Experience for Students, or ACES program (the ambulatory care elective), says the health center offers valuable "real-life" experience for students.

"Traditional, 100 percent inpatient-based training does not fully prepare students for a career in internal medicine," says De Fer, an assistant professor of medicine. "The vast majority of internists spend more than 90 percent of their time seeing patients in the outpatient setting. By increasing ambulatory education, students see what being a typical internist is really like and are more prepared to deal with common ambulatory problems."

Will Ross, MD, associate dean and director of Diversity Programs at the medical school, says the health center has exceeded expectations. Not only does it allow students to interact with patients early in their education, it has unified the Hilltop and Medical campuses, and is aiding in student recruitment.

"There is a movement afoot to provide greater patient exposure in the first year, and I think it's important to demonstrate that we are providing that in a structured fashion," says Ross. "The clinic is something we have endorsed as an institution, and that really carries over with prospective medical students. It illustrates our belief that students benefit from early patient contact and exposure to all of the issues

surrounding ambulatory care."

Ross estimates that at least 40 percent of applications he reviewed for the 1998 incoming class referred to the student health center. If it wasn't mentioned on the application, it frequently was brought up when candidates were interviewed.

"It has become a tremendously popular issue to discuss among prospective students," he says. "And perhaps among the most competitive students, it may be the attraction that brings them to Washington University over one of the other top medical schools."

Ross says few, if any, medical schools across the country provide the same kind of community health center experience for students. As a result, a group of students will submit a paper to the *Journal of the American Medical Association* this fall, presenting an overview of the health center's first year.



Michele Woodley, MD

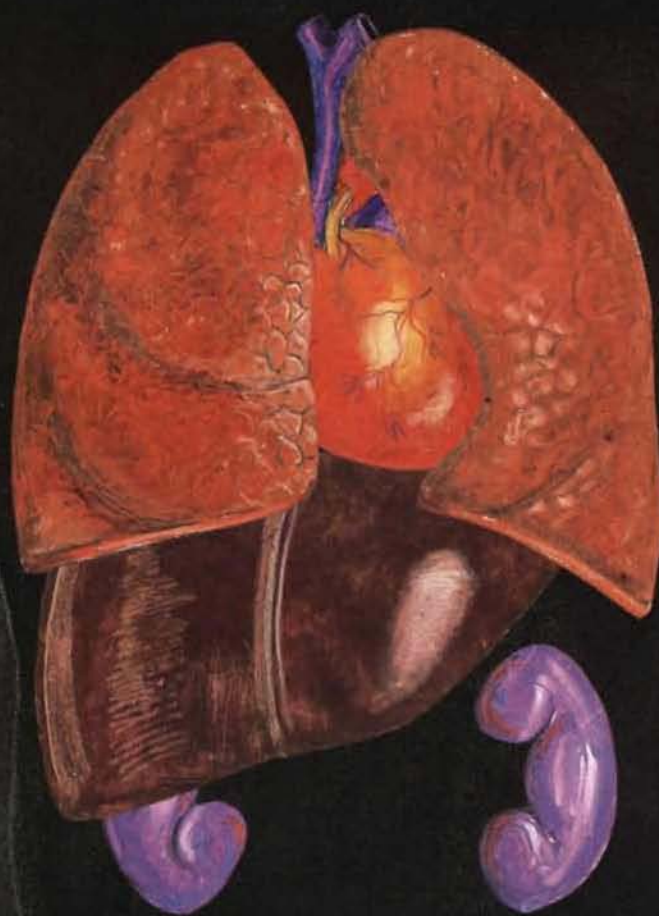
Ross says the paper will demonstrate how effective the health center has been, and, hopefully, aid the students with a proposed expansion.

"This has been so effective in pulling together a group of students for a common cause that I feel strongly about, and the students even stronger; this is a model that clearly should be replicated in other medical centers," he says. ●

Editor's Note: For more information about the Saturday Neighborhood Health Center, contact rossw@msnotes.wustl.edu or view <http://medicine.wustl.edu/socc>.

Miracles To Be Made

by Candace O'Connor



Shortage Of Donor Organs Frustrates
Physicians And Forces Transplant Programs
To Look At Alternative Therapies

Illustrations by Chris Callan

Nothing else in medicine can quite match the drama of organ transplantation. First, a surgical team dashes to a sometimes-distant hospital where it collects the liver or kidney, lungs or heart from a brain-dead donor. Then it hurries back, often by ambulance or private jet, carrying the precious, highly perishable cargo. And in the middle of the night, the team performs the delicate surgery that places this organ inside a desperate patient, who would soon have died without it.

"I get an unbelievable charge every time this works," says Jeffrey Lowell, MD, assistant professor of surgery and pediatrics. "Each time you transplant a kidney and see it make urine, or put in a liver and watch it make bile, you really feel like you're cheating death. It doesn't make any sense that this can happen — it is always a miracle to me."

This world of medical miracles is made up of the rawest human elements: tragedy and hope, altruism and dire need, tears of heartbreak and joy. But it also requires the most sophisticated surgical tools and techniques, along with an arsenal of the latest drugs, some still in clinical trial. Most important, its success depends upon the dedicated work of a team that includes not only surgical and medical transplant specialists but also nurses, social workers, dietitians, pharmacists, rehabilitation staff and insurance administrators.

The School of Medicine is at the forefront of this world, as one of the 120 U.S. centers performing

organ transplants. Transplant programs on the Medical Campus are jointly sponsored by the medical school, Barnes-Jewish Hospital and St. Louis Children's Hospital. Last year, faculty members did some 224 solid-organ adult transplants: 100 kidneys, 24 hearts, 41 livers and 59 lungs. Survival rates have soared, equaling or surpassing national averages. The one-year rate for liver patients here is close to 90 percent; 93 percent for heart patients. At a recent meeting of the American Society of Transplant Physicians, kidney specialists reported a one-year rejection rate of only 4.2 percent — the lowest rejection rate ever, in any transplant program.

"Our operative mortality is less than 10 percent, and our one-year survival rate is 85 percent," says G. Alexander Patterson, MD, the Joseph C. Bancroft Professor of Surgery and head of the adult lung transplantation program. "Since the first successful lung transplant 15 years ago, we have made tremendous technical progress in getting most patients through this operation safely."

Yet amid the excitement of this technical revolution, transplantation is still a frustrating field. Potent anti-rejection drugs, combined with careful

medical management, have largely conquered the problem of acute rejection, which killed many patients in the past. But a solution to the problem of chronic rejection, which can occur months to years after transplantation, remains maddeningly elusive.

And with the long waiting list of patients in need of a graft — more than 59,000 nationally and 1,300 locally — growing by 20 percent each year, the supply of organs still falls critically short. Professionals at Mid-America Transplant Services (MTS), the St. Louis-based organization that coordinates organ procurement for hospitals in this region, are experts at approaching donor families, with a success rate of 77 percent. But nationally, the rate is a static 55 to 60 percent — only 6 to 8 percent if no procurement professional is involved.

"We could double the number of transplants we do — tomorrow — if everyone who could donate would agree to it," says Todd Howard, MD, assistant professor of surgery and director of kidney and liver transplantation. "Some refuse because they say their family member has suffered enough, a specious argument because that person is dead. They may cite religious reasons, but there are no official objections in any of the world's major religions. Some people have trouble accepting the reality of brain death because their loved one is pink and warm, their heart is beating, they look as alive as anyone else."

In some countries, the shortage has created a lucrative black market in organs. Earlier this year, two Chinese nationals were arrested in New York City when they offered to sell the organs of executed Chinese prisoners for tens of thousands of dollars. In India, three transplant surgeons were charged with



Above: Jeffrey Lowell, MD, assistant professor of surgery and pediatrics. At left, G. Alexander Patterson, MD, Joseph C. Bancroft Professor of Surgery and head of the adult lung transplant program, the largest of the 18 Medicare-approved programs of its kind in the country.



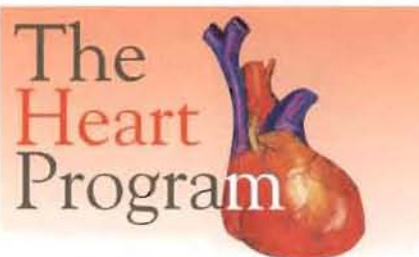
luring poor people to their clinic with promises of cash or jobs, then removing one of their kidneys and selling the organs to rich patients.

The organ shortfall has inspired some controversial solutions, such as the "Life for Life" bill proposed last February in the Missouri Legislature by Rep. Chuck Graham, D-Columbia. The bill, which was defeated in committee, would have allowed inmates to exchange a death sentence for life in prison if they donated a kidney or bone marrow. Organ donor groups and physicians sharply criticized the bill; as Jeffrey Lowell wrote in a newspaper commentary, "the gift from organ donors...is and must be a purely altruistic, voluntary offering. There can be no coercion or secondary gain."

Because of the shortage, transplant programs have been forced to aggressively seek alternative solutions. The School of Medicine's heart transplantation program, for example, has broadened its focus to become a comprehensive heart failure program, in which physicians evaluate end-stage heart patients comprehensively for alternative forms of treatment.

"Since we have this gigantic population that is never going to be transplanted, we continually look at innovative ways to treat these people using new surgical modalities, mechanical assistance and pharmaceuticals," says Joseph Rogers, MD, assistant professor of medicine and medical director of the cardiac transplant program.

Ultimately, the answer is more organ donation. In 1997, the Clinton administration launched a National Organ and Tissue Donation Initiative aimed at increasing donation by 20 percent in two years. "We're trying to be proactive in getting our story out," says Diane Chandler, MTS vice-president for clinical services. "But there is often a basic distrust — people still think you have to be rich and famous to get an organ. We're hoping to combat these myths by giving people more education."



The heart is an exquisitely delicate organ. All organs deteriorate quickly outside the

body, but hearts are the least durable of all, lasting a maximum of four hours. So heart transplantation must be a masterpiece of choreography.

"In heart surgery, we're used to working against the clock — but transplantation has to be coordinated so that we're ready for the new organ the moment it arrives. If it comes before we are ready, it sits in the corner of the room; if we dissect out the old heart too soon, then the patient is waiting on the heart-lung machine, which isn't good either," says Thor Sundt, MD, assistant professor of surgery and surgical director of the heart transplant program.

And the surgical stakes couldn't be higher for the 45 people with end-stage heart failure who are currently on the waiting list for a transplant. When a kidney or liver transplant fails, surgeons can sometimes try again, if a new organ comes available. "But if we put a heart in somebody and it doesn't work, that's it. Period. That person doesn't survive," adds Sundt.

During surgery, Sundt and Michael Pasque, MD, use the latest techniques to help make the transplant work. One is bi-caval anastomosis, which excises more of the recipient's own heart so that the placement of the new heart is as normal as possible. Using new immunosuppressive drugs, Joe Rogers can also combat episodes of acute rejection — one and a half per patient on average — with a



Thor Sundt, MD, surgical director of the heart transplant program.

three-day regimen of medication.

They are always keenly aware of the scarcity of donor hearts. At Tuesday morning meetings, the physicians explore alternatives to transplantation for the 300 patients referred to them each year. Recently, they also have developed an innovation: an auxiliary transplant donor list.

"Some people are worthy candidates but may not be offered a trans-

plant because they are older or have some disease. One man we transplanted had a primary malignant tumor of his heart. Anyplace else they'd say, 'forget it. That's not a good use of a scarce organ.' But we have developed this alternate list for people willing to be transplanted with good hearts from unconventional donors, such as older people," says Rogers.



The history of the lung transplantation program includes an impressive array of "firsts" and "bests." In 1988, it became one of the first U.S. programs solely dedicated to lung transplantation. Today, 420 lung transplants later, it is the largest of the 18 Medicare-approved programs in the country.

"There are 50 reasons why we have the best program," says Patterson. Surgically, we have more experience than others, since Dr. Joel Cooper and I were involved in developing lung transplantation. On the medical side, we have Bert Trulock, the most experienced pulmonary transplant physician in the world. We have our own intensive care unit, our own designated



Elbert P. Trulock III, MD, medical director of the lung transplant program, jests with patient Doris Wilson.

thoracic surgical floor for post-operative recovery, and a program that is unequaled for its multidisciplinary involvement."

And over the past decade, the program has been at the heart of many treatment innovations: single-lung transplantation for emphysema and primary pulmonary hypertension, the development of an easier method — the bilateral sequential method — for double-lung transplants, the successful use of more marginal organs than other programs, the management of cytomegalovirus (CMV) infection, the use of bronchoscopy and biopsy in monitoring patients for rejection and guiding immunosuppressive therapy.

But a continuing frustration is the lack of donor organs, which results in an 18-to-20-month wait for transplant patients. At any given moment, there are 25 or 30 patients on call in St. Louis and another 250 to 270 around the country who are listed with the lung program. Leading up to a spot on the list is a careful screening process, in which prospective patients undergo a careful evaluation.

"We select patients based on whether we think their chance of living is better with the transplant than without it. However, it is clear when you talk to them that their main motivation is not quantity of life but quality of life. They are not so afraid of dying; they are miserable living the way they are," says Elbert

P. Trulock III, MD, professor of medicine and medical director of the lung transplant program.

The most intractable problem is still chronic rejection, which contributes to a 50 percent graft failure rate over five years. Until this problem is solved, Trulock

says, they will focus on minimizing the risk factors for it, including episodes of acute rejection and CMV infection.

The Kidney Program



In the middle of the night, Jeffrey Lowell may be arriving by plane at some tiny, rural airport on his way to harvest a kidney from a brain-dead donor. If the donor is young, with healthy organs, Lowell is almost never the only surgeon there.

"Sometimes you fly into a place which is really just a landing strip with lights you turn on by dialing a radio frequency — and there are seven Lear jets lined up on the runway," he says.

He and his colleagues bring back 100 to 120 kidneys each year for transplantation, mostly in patients whose kidneys have been destroyed by diabetes, high blood pressure or various intrinsic diseases, such as polycystic kidney disease. Nationally, some 20 to 30 percent of all transplants each year come from siblings, parents, spouses or friends of the recipient — "live donor heroes," Lowell calls them.

Like the other transplant

programs, Lowell considers the ability to offer dual-organ transplants, such as liver-kidney, heart-kidney or liver-lung, one of its strengths.

Another is the team approach, in which the surgical and medical transplant specialists have offices side-by-side — and liver, a related program, is just around the corner.

Most remarkable of all is the minuscule rejection rate, which has been achieved by using existing medicines plus a new immunosuppressive drug, thymoglobulin, still in clinical trial. But such potent drugs may set the stage for infection, so physicians have countered that possibility with a drug, oral ganciclovir, which seems to prevent CMV. They also are testing new anti-cholesterol drugs to prevent chronic rejection.

"But these drugs are expensive," says Daniel Brennan, MD, assistant professor of medicine and medical director of kidney transplantation. "I think we need to develop new ways to induce tolerance, so that a patient — or perhaps the graft itself — can be treated before surgery to accept it from the beginning. We're now looking at some basic science mechanisms to lead us toward that holy grail."

The Liver Program



Some time ago, Todd Howard saw a familiar-looking young woman in a restaurant. She came up and introduced herself — a former patient, who had taken an overdose of Tylenol® as an unhappy 17-year-old and wound up needing a liver transplant. Today she is fine — "it was gratifying to see her doing so well," he says.

At the peak of her illness, she was rated as "status 1": a patient with hepatic failure caused by a sudden medical event or a failed transplant. Patients with chronic

liver disease, now at end-stage, rate as status 2A; those who are less sick are listed as 2B or 3 — the ideal patients to transplant because they are still healthy enough to do well during and after surgery.

Unlike kidney patients, who can be kept alive on dialysis, there is no holding action for patients who have liver failure. So status 1 patients need a graft quickly; their condition deteriorates precipitously the longer they wait.

"I can show you a man with liver failure due to hepatitis, probably from food he ate, who had to wait seven days before we got an organ for him. Now he has been in our ICU for three weeks, critically ill; he'll probably survive but it will be a long recovery. If he had been transplanted the day we listed him, he'd be home by now," says Howard.

There are 70 to 90 people on the liver waiting list, with five or six new referrals coming in each week. The operation they need is technically complex. Kidney transplants

take only three hours on average, since the old organs have usually atrophied and do not need to be removed. But a liver transplant may take from 6 to 20 hours, and getting the diseased liver out involves tricky, vascular surgery.

For reasons that are not fully understood, chronic rejection is rarely a problem with liver transplant. "But when it does occur, it can be much more frustrating than acute rejection because it may indicate that, if we re-transplant, the patient may develop the same problem again," says Cary Caldwell, MD, assistant professor of medicine and, along with Marion Peters, MD, medical co-director of the liver transplant program.

In the near term, he says, several promising new drugs may offer hope for fewer side effects than occur with traditional immunosuppressants, such as cyclosporin and FK506. Years in the future, the development of an artificial liver may revolutionize transplantation. ●

Organs That Can Be Transplanted

1. Cornea
2. Middle Ear
3. Lung
4. Heart
5. Blood Vessels
6. Liver
7. Pancreas
8. Kidney
9. Bone
10. Bone Marrow
11. Skin
12. Intestine

SOURCE: *The Journal for Minority Medical Students*, Volume 10, Number 2, Page BB3, Winter 1998

Addressing The Issue Of Supply And Demand

Marked improvement in the safety and survival rates for organ transplant as well as organ preservation techniques have created new challenges in transplant. The greatest of these is that the demand for organs exceeds the supply and the gap is growing.

Under the current system, the country is divided into 63 areas and 11 regions. When an organ becomes available in an area, it is offered to

the sickest patient there who is the right size and has the right blood or tissue type; if no one suitable is on the list, the organ is offered to the sickest regionally, then nationally. Thus, centers in different regions also may have different waiting times. The wait may be especially lengthy in areas with the largest centers that have longer wait lists — and often sicker patients — than small community-based hospitals.

In April, the Department of Health and Human Services (HHS) issued a final rule governing the Organ Procurement and Transplantation Network (OPTN), which is operated by the United Network of Organ Sharing. The six components of the rule address: organ allocation policy, reducing socioeconomic impact, public access to data, OPTN board composition, HHS oversight and enforcement of penalties including termination of a provider's participation and reimbursement under Medicare or Medicaid.

Barnes-Jewish Hospital administrators and School of Medicine physicians say they welcome efforts by HHS to improve access to organs for transplantation and agree with the six underlying principles. However, they disagree with components of the rule that they say oversimplify transplant and are naive with regard to implementing in day-to-day operations. The group delivered its position as written testimony to the Senate Labor Committee and House Commerce Committee joint full hearing in June, and as a position paper to HHS during the rules comment period which ends August 1, 1998.

Mary Spencer, director of business development and transplant services for BJH, and BJH transplant physicians and surgeons will continue to review and evaluate the implementation or modification of the HHS rule throughout the summer. ●

COMBATING MICROBIAL MAYHEM



RESEARCHERS ZERO IN
ON HOW MICROORGANISMS
INVADE THE BODY

by LINDA SAGE

They come in all shapes and sizes, sticking to flesh, sneaking into cells, creating mayhem.

Twenty years ago, we thought the problem was solved – give more antibiotics. But microorganisms that cause disease are outwitting us as they develop resistance to one drug after another. Aiding the search for better therapies, School of Medicine researchers are scrutinizing structures, altering genes and revving up the fight against pathogens. Understanding how microbes invade the body is the key to further progress.



STEPHEN M. BEVERLEY, PhD, the Marvin A. Brennecke Professor and head of the Department of Molecular Microbiology, studies *Leishmania*, a tropical parasite that ulcerates the skin, mucous membranes and internal organs, affecting more than 10 million people in the developing world. In 1990, Beverley made a major breakthrough when he developed a way to introduce genes into *Leishmania*, enabling scientists to genetically manipulate the microbe for the first time. In the course of his genetic research, he obtained a mutant that is unable to grow without access to thymidine, a building block of DNA. He later realized the mutant was a potential vaccine if it could prime the immune system to resist future infections. It would be unable to multiply in the thymidine-free compartment of the macrophage where *Leishmania* lives. The vaccine now is being tested in rhesus monkeys in Brazil. Beverley also has studied *Leishmania* mutants that are unable to make a surface molecule called lipophosphoglycan and has identified a number of virulence genes involved in lipophosphoglycan synthesis. His group recently used jumping genes from *Drosophila* to inactivate specific *Leishmania* genes. They hope to use the technique to find genes that must be active when *Leishmania* infects humans.

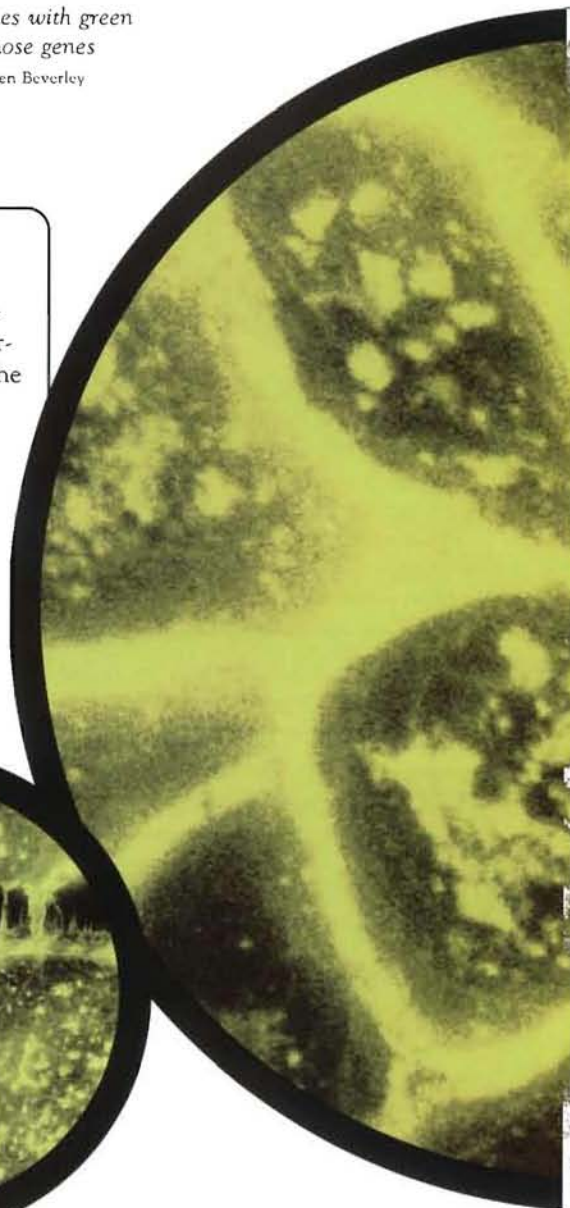
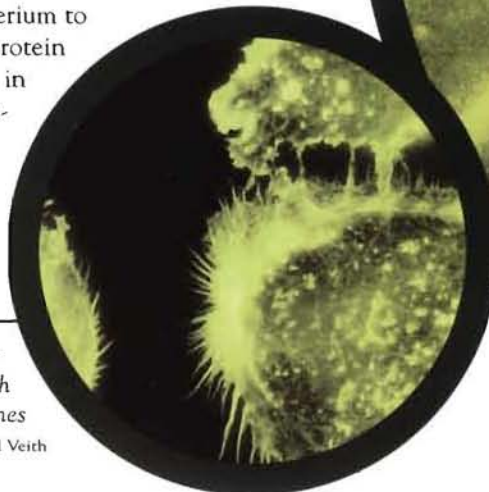


Tagging specific *Leishmania* genes with green fluorescent protein reveals when those genes become active. Courtesy: Sean Ha and Stephen Beverley



MICHAEL G. CAPARON, PhD, associate professor of molecular microbiology, studies *Streptococcus pyogenes*, which is associated with strep throat, impetigo, streptococcal toxic shock syndrome, autoimmune kidney disease, scarlet fever, rheumatic fever and Sydenham's chorea. When the bacterium transforms itself into a deadly flesh-eater, it causes necrotizing fasciitis. Caparon's group developed the first genetic tools for studying the organism, including reverse genetics and pieces of DNA that jump into and inactivate specific genes. In collaboration with William

C. Parks, PhD, associate professor of medicine and cell biology and physiology, the group also is developing laboratory models for studying the organism's interactions with human skin cells. By infecting these cultures, they can observe changes in host cell gene expression and cytoskeleton. Using the genetic tools, they then can determine which genes contribute to these changes. To date, they have identified genes for two key proteins. M protein allows the bacterium to adhere to skin cells called keratinocytes. F protein mediates its attachment to Langerhans cells in skin. The researchers currently are determining which regions of these proteins are important for adhesion and are looking for the relevant skin cell receptors. Genetic studies should reveal how the genes that encode these proteins are regulated.

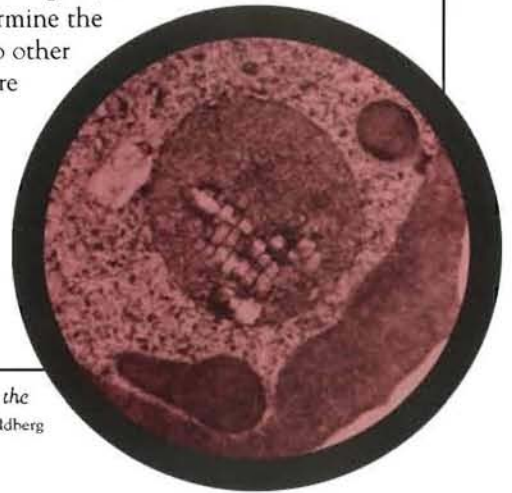


Human skin cells normally fit snugly together (right), but when they are infected with *S. pyogenes*, some disappear and the remaining ones form filopodia (left) Courtesy: Natividad Ruiz and Michael Veith



DANIEL E. GOLDBERG, MD, PhD, professor of medicine, studies *Plasmodium*, the protozoan that causes malaria. The parasite enters red blood cells, digesting the red pigment hemoglobin for food. Goldberg has discovered four enzymes involved in hemoglobin breakdown: two proteases called plasmepsins that unwind the molecule and two proteases that chop up the molecule. He now is developing inhibitors of the plasmepsins. To see which small molecules fit inside the enzyme's active region, he has collaborated with researchers at the National Cancer Institute to determine the crystal structure of plasmepsin II. His lab also is collaborating with two other

groups to rapidly screen large numbers of potential inhibitors, and the collaborators are extending the search through combinatorial chemistry. Several potential drugs have been found. After their selectivity, potency and bioavailability have been improved, they will be tested in animals within the year. A second approach to drug development has emerged from Goldberg's discovery of *Plasmodium* proteins that detoxify the poisonous heme that is digested out of hemoglobin. With David R. Piwnica-Worms, MD, associate professor of radiology and molecular biology and pharmacology, Goldberg is developing a new class of drugs to inhibit this polymerization and therefore expose the parasite to lethal levels of heme.



A parasite-infected red blood cell containing microscopic blocks of hemozoin, the nontoxic waste *Plasmodium* makes from toxic heme. Courtesy: Daniel Goldberg



Bordetella pertussis, the bacterium that causes whooping cough, colonizing ciliated cells in the trachea.

Courtesy: William Goldman, Chris Ho and Ken Muse

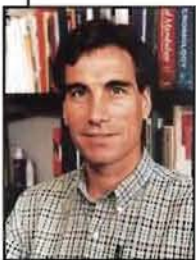
WILLIAM E. GOLDMAN, PhD, professor of molecular microbiology, studies two organisms that infect the respiratory system: *Bordetella pertussis*, the whooping cough bacterium, and *Histoplasma capsulatum*, the histoplasmosis fungus. His *Bordetella* studies focus on a sugar-peptide called tracheal cytotoxin (TCT), which is central to the disease. Using synthetic TCT-like molecules, his group has concluded that the peptide is the active part of TCT in *Bordetella*, in contrast to similar molecules



that modulate the immune system or promote sleep. Now they are determining how TCT affects tracheal cells. They already have demonstrated that TCT triggers production of interleukin-1 and nitric oxide, two inflammatory molecules, and they presently are identifying which cell types produce each of these mediators. Recently, they showed that TCT also switches on a pathway involving protein phosphorylation, a widely used intracellular signal. A parallel study is looking at the contributions of nitric oxide to other airway diseases such as asthma. The group's recent work on how bacteria process peptidoglycan has suggested that *Bordetella* releases TCT because it lacks the gene for a certain membrane protein. This protein is required for uptake and recycling of peptidoglycan fragments.

Haemophilus influenzae adhering to epithelial cells. Courtesy: Joseph St. Geme

JOSEPH W. ST. GEME, MD, associate professor of pediatrics and molecular microbiology, studies *Haemophilus influenzae*, an important cause of middle-ear infections, sinusitis, bronchitis, and pneumonia. *H. influenzae* initiates infection by colonizing the upper respiratory tract, where it may hide inside epithelial cells for weeks or months. St. Geme has identified a series of proteins that enable the organism to interact with these cells. Depending on the strain, high-molecular-weight proteins belonging to one of two families promote bacterial attachment to the epithelial cell surface. A separate protein facilitates both attachment and cellular invasion. St. Geme's group also has discovered that the organism turns down production of these proteins when

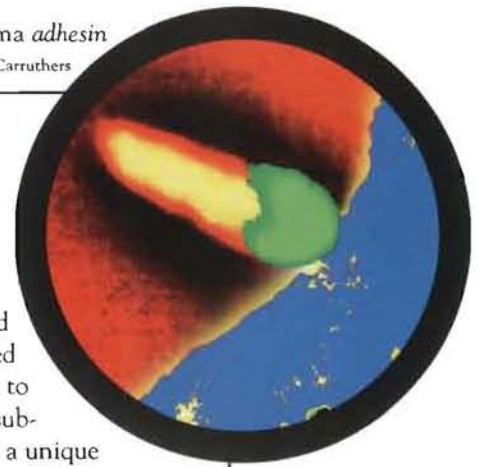


it migrates to the middle ear, like a stealth bomber avoiding radar detection. Efforts are now under-way to incorporate these adhesins into a vaccine. In a related line of investigation, St. Geme is studying the pathways that bring the *H. influenzae* adhesins to the surface of the bacterium, hoping to identify key steps that might be common to other pathogens and could be targeted with novel antimicrobials. At present, approximately 30 percent of *H. influenzae* isolates are resistant to amoxicillin, the usual first-line antibiotic for treatment of middle-ear infections, sinusitis and some cases of pneumonia.



Pseudocolor image shows the distribution of the *Toxoplasma* adhesin MIC2 during host-cell attachment. Courtesy: Vern Carruthers

L. DAVID SIBLEY, PhD, associate professor of molecular microbiology, studies *Toxoplasma gondii*, the protozoan that causes toxoplasmosis, an important cause of birth defects. One-fourth of the world's population is estimated to be infected. Sibley's group has shown that the parasite uses an internal molecular motor, made of actin and myosin, in combination with an external attachment factor to glide through tissues and invade host cells. An adhesive protein, MIC2, provides the necessary traction. MIC2 is secreted from the apical end of the parasite and binds to extracellular matrix proteins and sulfated glycoproteins. The actin-myosin motor moves MIC2 from the front to the back of the parasite, propelling the microbe forward across the substrate and into the host cell. Within the host, *Toxoplasma* resides in a unique intracellular vacuole. Sibley's group has shown that this vacuole completely resists fusion with host compartments that destroy pathogens. The researchers also have developed molecular tools for identifying and analyzing *Toxoplasma* strains obtained from humans. Using these reagents in epidemiological studies, they discovered that there are just three lineages of *Toxoplasma gondii* that rarely interbreed. Because one of these was most often associated with disease, they now are examining the genetic basis of pathogenesis by this form of *Toxoplasma*.

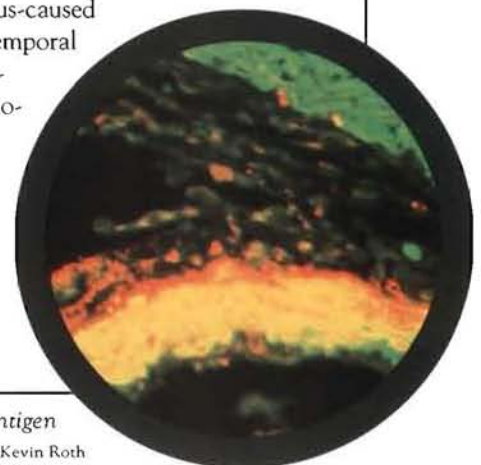


SAMUEL L. STANLEY JR., MD, associate professor of medicine and molecular microbiology, studies *Entamoeba histolytica*, a protozoan that causes 40 million cases of dysentery each year and is the third leading cause of death from parasitic diseases. In collaboration with Ellen Li, MD, PhD, professor of medicine and associate professor of biochemistry and molecular biophysics, Stanley discovered that the parasite recognizes and binds to a modified sugar on the surface of intestinal cells. Along with other researchers, they also have shown that the organism secretes an enzyme that cuts through the fibrous matrix around epithelial cells, facilitating invasion. Stanley also has found that white cells called neutrophils play an important role in controlling amebic liver abscesses, the major nonintestinal complication of infection. The lab now is focusing on potential oral vaccines that could stimulate intestinal immune responses and protect against the parasite. Some of the most promising candidates are combinations of *E. histolytica* proteins with antigens from the bacterium that causes typhoid fever or the bacterium that causes cholera. Another combination contains an amebic protein plus a protein from *Shigella*, the other major cause of dysentery. Stanley is hoping to test these dual vaccines on humans within the next two years.



Filopods of *Entamoeba histolytica* extending to cultured human intestinal cells. Courtesy: Michael Veith

HERBERT W. VIRGIN, MD, PhD, associate professor of pathology, molecular microbiology and medicine, studies mouse viruses that resemble two human viruses. In 1997, Virgin and Samuel H. Speck, PhD, associate professor of pathology and molecular microbiology, made the surprising discovery that murine γ -herpesvirus 68, a close relative of the Epstein-Barr virus that causes mononucleosis, can trigger disease of the great blood vessels. The virus-caused injury looked very like the vascular damage in Takayasu's arteritis, temporal arteritis and Kawasaki's disease, which have been classified as autoimmune disorders. Moreover, the researchers found that a specific component of the immune system, interferon- γ , normally keeps the virus at bay. The study was the first to demonstrate a link between these viruses and artery disease, and it provided an important insight into the dynamics of chronic infection, which involves a balance between the virus and the immune system. Virgin now has shown that murine cytomegalovirus also damages great vessels and that the chronic infection again is regulated by interferon- γ . Because the phenomenon may be of general importance, strategies to protect arteries could perhaps be developed. The findings also raise questions about whether viruses can trigger atherosclerosis. ●



Murine γ -herpesvirus 68 in smooth muscle cells of an arteritic lesion, with viral antigen showing as red, actin as green and colocalization as yellow. Courtesy: Albert Dal Canto and Kevin Roth



In The Driver's Seat

**Occupational Therapists
Meet The Challenges Of
Today's Health Care**

by Holly Edmiston

WHEN ERIC WESTACOTT'S health insurer decided that continued physical rehabilitation would not increase his function, it cut off payment.

But Westacott, an athlete who was paralyzed during a college softball game, did not accept a verdict that allowed no room for improvement. He believed that he could continue to build strength — enough to perform basic skills that would allow him to pursue an advanced degree and a career.

He contacted the Program in Occupational Therapy at Washington University to find a community-based service through which he could continue therapy. Two years later, the determined 25-year-old has his driver's license and is awaiting delivery of a specially adapted van that he will use to drive himself to and from law school in the fall.

"Without the support and help from the OT department, I would not be able to be as independent as I am now," says Westacott, who received free services. "I live on my own, and that would not have been possible. I wouldn't have been able to drive, so there would have been no thought of going to law school."

Westacott was a 20-year-old college senior at Southwest Missouri State in Springfield when he sustained a severe spinal cord injury after attempting to steal a base during a softball game. He was left quadriplegic.

After more than a year of rehabilitation in both Springfield and Denver CO, he returned to college and graduated in December 1995. He then moved to St. Louis to continue therapy. In April 1996, Westacott's insurance company stopped paying for services.

According to OT faculty, Westacott's case is not unusual — managed care programs in the United States rarely provide for intervention after a patient with a disability has become stable at home. In working with Westacott, faculty and students demonstrated that those with spinal cord injuries can continue to gain function more than a year after injury.

Work Performance Laboratory

At the medical school, Westacott was introduced to David B. Gray, PhD, associate director, research, in occupational therapy. When Gray learned that Westacott's chief desire was to regain enough muscle strength to drive, he and colleague Leonard N. Matheson, PhD, contacted several occupational therapy students who were interested in working with clients like Westacott.

Matheson, assistant professor in occupational therapy, says insurance companies don't allow enough time for rehabilitation of spinal cord injury. "The problem is that occupational therapy has been linked to the medical care of the person," he says. "When medical care ceases, soon after occupational therapy stops being authorized.

"Eric has 2 percent of the physical capacity of the average person," he explains. "It is more important for him to continue to be fit than it is for those who are physically



David B. Gray, PhD, and Leonard N. Matheson, PhD, guided occupational therapy students in designing a treatment plan for Eric Westacott.

healthy." And while motivation is a key factor in the rehabilitation of people with disabilities, Matheson says, "motivation has to be provided opportunity."

Opportunity for Westacott came in the form of six occupational therapy students who wanted to work with him using the equipment in the occupational therapy work performance laboratory. Gray and Matheson, director of the laboratory, consulted with the students as they designed a plan of treatment.

The student-run initiative had two components. For their master's theses, students Kathy Woods and Heidi Wessell tackled one of the major technical issues: setting the



Occupational therapy students Heidi Wessell, left, and Kathy Woods work with Eric Westacott on the Uppertone in the Work Performance Laboratory.

standard for minimum requirements necessary for driving.

How much and what type of strength would Westacott need to manipulate the hand controls of an adapted van? To answer this question, the students used Gray, himself quadriplegic and a driver, as a model. By testing him for certain motions, they were able to use his strength levels as a baseline in customizing a rehabilitation plan for Westacott.

They developed two protocols. Wessell looked at what it would take to increase driving endurance. Woods examined the configuration

of the steering wheel: its angle, height and distance from the driver.

In his own case, says Gray, he was expected to adapt to the van, not the other way around. "That's where occupational therapists really come in," he says. "It's one thing to give somebody assistive technology, but it's another to get them to be able to use it in an optimal way."

Westacott also worked with occupational therapy students Jamie Wheat, Dustin Durr, Louis Pitonyak and Joel Manwill, all of whom volunteered their time.

In their work with Westacott,

the students used the LIDO WorkSET and the Uppertone. The LIDO WorkSET isolates muscles in the upper body and can be operated from a wheelchair. It is used to measure strength over time as a client's status changes or as a piece of workout equipment. The Uppertone is used for working larger muscle groups.

Westacott's strength has tripled since he started working out nearly two years ago. In addition to meeting his goal of regaining enough strength to drive, his increased strength and endurance have

A Case Study

While their classmates relaxed following graduation, four recent alumni of the Program in Occupational Therapy instead quickly plunged into the professional world of their chosen field.

The students wrote a paper, "Spinal Cord Injury: Functional Gains Beyond Traditional

Rehabilitation," detailing their experience working with Eric Westacott. They were invited to present their findings at a meeting of the World Federation in Occupational Therapy, one of the profession's most prestigious organizations.

In the case study, the students challenge the assumption that functional gains made by people with spinal cord injury cease after one year of rehabilitation. The students write:

"Using a client-centered approach, which focused on Eric Westacott's goals of driving an adapted van, writing, keyboarding and self-feeding, he began a task-simulation conditioning program utilizing the LIDO WorkSET. Training sessions were two days a week, 60 minutes per session, with a focus on measuring progress in strength, endurance, work and power."

The students detail the improvements Westacott made in rehabilitative therapy. They argue that his gain in function demonstrates the need and value of instituting physical training programs in community settings. They also outline the consultative role occupational therapists can serve to direct the set-up of such programs for people with disabilities.

"It is significant and impressive for students to be recognized in this way," says Leonard Matheson, PhD. "Our students as a group are very busy — the fact that these students were able to find the time for this very important volunteer project is remarkable." ●



Occupational therapy students, from left, Dustin Durr, Louis Pitonyak, Jamie Wheat and Joel Manwill, were invited to a meeting of the World Federation in Occupational Therapy, in Montreal, Canada, to present a case study on their work with Eric Westacott.

improved his writing, keyboarding and self-feeding skills.

The arrangement between client and students was win-win: For Westacott, it was a chance to continue the process of rebuilding muscle strength; for the students, it was an opportunity to gain valuable experience.

"All of the students who have been involved with Eric have developed some terrific skills, both in terms of the technical aspects of his therapy and in interacting with a person who has a severe disability," says Matheson.

"We've begun to understand that health is best maintained when people are involved in meaningful activities," he continues. "The benefits of a program like the one our students developed are not only to the disabled person. We all benefit when we enable a person to return to society to function to the best of his ability."

Disability Science

Working with clients like Eric Westacott is just one way that the occupational therapy program is challenging stereotypes about what constitutes occupational therapy.

Faculty continue to explore ways to develop non-traditional services and programs. Matheson is actively involved in the Social Security Administration's efforts to improve methods of determining disability. Gray works with researchers at the World Health Organization to develop the International Classification of Impairments, Disabilities and Handicaps that will allow comparison of health care systems worldwide. Faculty also consult with organizations, communities and industry to remove barriers that limit the potential of individuals with disabilities.

Today's greater emphasis on overall health and on what people do to support their health puts occupational therapy into a broader arena, says M. Carolyn Baum, PhD, Elias Michael Director of the

occupational therapy program.

"We're doing a lot of work now with people in the context of where they live — such as working with individuals in senior citizen centers to promote socialization and fitness, and in homeless shelters to develop life skills for work."

The profession of occupational therapy has come full circle from where it began at the turn of the century, she says. "Occupational therapists have returned to the



M. Carolyn Baum, PhD, Elias Michael Director of the Program in Occupational Therapy, is leading the program into a new age of managed health care by focusing on the sciences.

person/environment interaction that is key to the specialty, following years of focus on a more medical orientation of health.

"This isn't to take away from the acute nature of illness and injury," Baum explains, "because some individuals need a process to guide them back to healthful living. But I do think there's a broader perspective in what health means, and occupational therapy has a body of knowledge that can be applied both in the acute and in the community-based context of disability.

"The mission of Washington University is to build knowledge and a sense of community about that knowledge," says Baum. "Occupational therapy was buried for a long time because we didn't have the

science. Ten years ago we made a commitment to become an academic partner in the university."

To do that, Baum recruited scientists from diverse fields, including cognitive and experimental psychology, physical and medical anthropology, neuro- and developmental psychobiology and behavioral genetics. In addition, eight faculty occupational therapists returned to school and earned doctoral degrees in related fields.

"Occupational therapy is driven by neuroscience and the understanding of physiological, cognitive and psychological factors that influence performance," says Baum. "We help people achieve their goals by teaching them to problem-solve and to make adaptations in their environment that support those goals."

The quality of the faculty and the research being done at Washington University is gaining notice. In the 1998 "America's Best Graduate Schools" published by *U.S. News & World Report*, the program was ranked third in the nation among occupational therapy graduate school programs.

The program currently receives \$1.5 million in external funding annually, including grants from the National Institutes of Health, the Centers for Disease Control and Prevention and the James S. McDonnell Foundation.

Future plans for the program include adding a doctoral degree to complement the existing two-year master's degree. The doctoral degree would be interdisciplinary in nature and would engage scientists from throughout the university.

"We want the science of occupational therapy to grow," says Baum, who hopes to see the new degree program in place by 2000. "We want to train our students to answer questions that are going to improve the lives of people with disabilities." ●

Match Day 1998

THE annual Match Day was held on March 18 and 107 of the 120 graduating medical students took part in the National Residency Matching Program.

Sixty-one percent of the participants received first-year residency positions at their first choice of institution and 83 percent matched to one of their top three choices. Thirteen students found positions independent of the NMRP or did not take residencies immediately.

California

Loma Linda

Loma Linda University
Plastic Surgery
Allen Doezie

Los Angeles

LAC-USC Medical Center

Dermatology
Kimberly Uhles
General Surgery
Mike Bowdish
Internal Medicine
Jaejoon Lee

University of Southern California-LA

Ophthalmology
Peter Pham
Howard Ying

UCLA Medical Center

General Surgery
Letitia Bridges

Oakland

Children's Hospital-Oakland

Pediatrics
Charlotte Hsieh

San Diego

University of California-San Diego
Medical Center

Internal Medicine
Rubin Chandran
Jeffrey Wei

San Francisco

California Pacific Medical Center

Internal Medicine
Jennifer Rowberry
Rui Wang

Kaiser Foundation Hospital

Internal Medicine
Dan Ladabaum

University of California-San Francisco

Internal Medicine
Chad Rammohan
Neurology
Tim Miller

Pediatrics
Ericka Hayes
Tony Tsai

Stanford

Stanford Health Services

Pathology
Kevin Ferguson

Torrance

Harbor-UCLA Medical Center

Pediatrics
Chia-Chieh Hu



Fezzik, the dog, gives a congratulatory nuzzle during the Match Day celebration to his owners, fourth-year medical students Jennifer and Derek Hausladen. The Hausladens will spend their residencies at Yale-New Haven Medical Center.

Colorado

Denver

University of Colorado
Pediatrics
Marc Seidman

Connecticut

New Haven

Yale-New Haven Medical Center

Dermatology
Dan Kaplan
Pediatrics
Jennifer Hausladen
Urology
Derek Hausladen

Yale University
Ophthalmology
Chet Reistad

District of Columbia

Washington

Georgetown University Hospital

Pediatrics
Andrea Pennington

Hawaii

Honolulu

University of Hawaii Integ. Medical

Residency
Internal Medicine
Rebecca Gelber

Illinois

Berwyn

Macneal Hospital

Family Practice
Richard Kasufkin

Chicago

Children's Memorial Hospital

Pediatrics
Corrie Goergen
Liz Swider

McGaw Medical Center/ Northwestern

University
Emergency Medicine
Dan Dolan

Internal Medicine
Eric Bullock
Internal Medicine-Primary
Han Kim

University of Chicago

Anesthesiology
Rosenna Hui
Internal Medicine
Vineet Arora
Susan Philip
Joel Rubenstein
Obstetrics/Gynecology
Katrina Lee
Orthopaedic Surgery
Rit Tun

Indiana

Indianapolis

Indiana University School of Medicine
Emergency Medicine
Patty Short

Iowa

Iowa City

University of Iowa
Ophthalmology
David Petersen

Kentucky

Lexington

University of Kentucky

Urology
Clint Merrick

Maryland

Baltimore

Johns Hopkins University

Internal Medicine
Kyrsten Fairbanks
Neurology
Agnies Ardelt
Radiology-Diagnostic
Ray Hsu
Andrews Air Force Base
Transitional
Andrea Stonecipher

Massachusetts

Boston

Boston University Medical Center

Orthopaedic Surgery
Tim Bhattacharyya
Brigham & Women's Hospital
Pathology

Lynn Bry
Scott Rodig
Harvard/Mass Eye & Ear
Otolaryngology
Laxmeesh Nayak

Michigan

Ann Arbor
University of Michigan Hospitals
Internal Medicine
Rashmi Mehrotra
Detroit
Henry Ford Health Science Center
Dermatology
Alice Cheng
WSU/Detroit Medical Center
General Surgery
Scott Henry

Minnesota

Duluth
Duluth Graduate Medical Education
Family Practice
Scott Staples
Rochester
Mayo Graduate School of Medicine
Internal Medicine
Ada Igwebuike

Missouri

Columbia
University Hospital & Clinics
Family Practice
Jeanie Rawson
St. Louis
Barnes-Jewish Hospital
Anesthesiology
Quoc Dang
Dermatology
Ben Yu
Emergency Medicine
Chris Gerst
Brad Gregg
General Surgery
Mark Cohen
Internal Medicine
Michelle Beutz
Vicky Chen
John Chiu
Heidi Joist
David Owens
Kara Rysman
Internal Medicine-Primary
Ann Tuttle
Pathology
Jim Cook
Keith Pinckard
Radiology-Diagnostic
Howard Harwin
Mike To-lora
St. Johns Mercy Medical Center
Family Practice
Jennifer Jones
St. Louis Children's Hospital
Pediatrics
Nancy Chen
Dawn Ebach
George Fogg
Lisa Moscoso
St. Louis University School of Medicine
Pathology
Jim Lewis
Pediatrics
Irene Hung
Washington University/Barnes-Jewish
Hospital

Orthopaedic Surgery
Angela Freehill
Washington University School of
Medicine
Neurology
Mik Stambuk
Ophthalmology
Susan Culican
Otolaryngology
Carla Huff
Urology
Joseph Oh

New Jersey

New Brunswick
UMDNJ-Robert Wood Johnson Pisc.
Orthopaedic Surgery
Matt McLean

New York

New York
Presbyterian Hospital
Pediatrics
Karen Dorsey
The New York Hospital
Internal Medicine
Sandeep Jauhar

North Carolina

Chapel Hill
University of North Carolina
Family Practice
Stefani Frost
Internal Medicine
Richard Tsai
Durham
Duke University
Internal Medicine
Susan Gurley

Ohio

Cincinnati
University Hospital Inc./Cincinnati
General Surgery
Bruce Robb
Cleveland
Cleveland Clinic Foundation
Radiation Oncology
Chandrika Yalavarthi
University Hospitals of Cleveland
Internal Medicine
Frank Jacono
Orthopaedic Surgery
Mihir Patel

Pennsylvania

Hershey
Pennsylvania State Geisinger/Hershey
Orthopaedic Surgery
Amir Fayazi
Lancaster
Lancaster General Hospital
Family Practice
Susan Angelisanti
Philadelphia
Hospitals of the University of
Pennsylvania
Internal Medicine
Valerie Amorosa
Judy Cheng
Petros Karakousis
Kathleen Page
St. Christopher's Hospital
Pediatrics
Kelly Klingler
Pittsburgh
Allegheny General Hospital

Internal Medicine
Mark Paulos
University Health Center
General Surgery
Kaye Nembhard

Tennessee

Nashville
Vanderbilt University
Internal Medicine
Jean Lessly (Raines)
Radiology-Diagnostic
Chad Clark

Texas

Dallas
University of Texas Southwest Medical
School
Internal Medicine
Dan Drake
Alan Pao
Galveston
University of Texas Medical Branch-
Galveston
Radiation Oncology
Arnold Smith
Houston
Baylor College of Medicine
Pediatrics
Korwyn Williams
University of Texas Medical School
Pediatrics
Amy Trotter

Utah

Salt Lake City
University of Utah
Internal Medicine
Heather McGuire
Neurosurgery
Paul House

Virginia

Portsmouth
Naval Medical Center
Surgery-Preliminary
Chris Ellington
Richmond
Medical Center of Virginia
Otolaryngology
Vivek Gupta

Washington

Renton
Valley Medical Center
Family Practice
Steve Gray
Seattle
University of Washington
Radiology-Diagnostic
Herman Wu
Anesthesiology
Steve Hardy
Otolaryngology
Henry Ou

Wisconsin

Madison
University of Wisconsin Hospitals &
Clinics
Internal Medicine-Primary
Julie Steiner

Other

Research in Orthopaedics
David Chiara
Research Year
Roderick McCoy

Seven Honored With Awards



The 1998 Reunion Award recipients, front row, from left: Penelope Shackelford, MD '68; David Kipnis, MD; second row, William Blythe, MD '53; Jeffrey Milbrandt, MD '78, PhD; back row, Timothy Ley, MD '78, and Lynn Taussig, MD '68. Photo inset of John Sandson, MD '53.

Alumni Achievement Awards

William B. Blythe, MD '53, is the Marion Covington Distinguished Professor of Medicine at the University of North Carolina (UNC). At UNC, Blythe directed the General Clinical Research Unit for 10 years and the division of nephrology for 20 years. His honors include Alpha Omega Alpha, the Distinguished Faculty Award of the UNC Medical Alumni Association, and the Distinguished Service Award of the National Kidney Foundation.

John I. Sandson, MD '53, is dean emeritus and professor of medicine emeritus at Boston University School of Medicine. During his 14 years as dean of Boston University School of Medicine, Sandson initiated a multi-pathway, flexible curriculum that emphasized the training of family physicians and he became the national leader in promoting low-interest, revolving student loan funds. Under his leadership, a School of Public Health was created.

Lynn M. Taussig, MD '68, is president and chief executive officer of the National Jewish Medical and Research Center and professor of pediatrics at the University of Colorado Health Sciences Center in Denver. Taussig was chairman of the Department of Pediatrics at Arizona Health Sciences Center in Tucson for nine years. He has been instrumental in developing pediatric pulmonology as a specialty, and has earned international recognition for his research.

Alumni/Faculty Awards

Timothy J. Ley, MD '78, is professor of medicine and genetics and director of the Hematopoiesis Research Center at the School of Medicine. Ley has earned a reputation as being an extraordinary teacher and researcher. His work on identifying and explaining how certain "killer enzymes" do their work has broad implications for understanding the immune system's role in fighting infection, controlling tumor growth and causing graft rejection and graft vs. host disease.

Jeffrey D. Milbrandt, MD '78, PhD, is professor of pathology and medicine at the School of Medicine and director of the Clinical Molecular Biology Laboratory. Milbrandt has done world-renowned research involving the discovery and understanding of the biological function and molecular mechanisms of transcription factors. He also has made significant discoveries in the areas of neuronal death and regeneration. Milbrandt is known as a catalyst for the work of others, an attribute that enables him to attract gifted trainees to his research team.

Penelope G. Shackelford, MD '68, is professor of pediatrics, associate professor of molecular microbiology, director of the division of infectious diseases, and director of Washington University Child and Adolescent Specialists at the School of Medicine. She currently is on the Board of the Faculty Practice Plan and, nationally, on the Subboard of Pediatric Infectious Diseases of the American Board of Pediatrics. Shackelford received a Distinguished Faculty Award in 1992, and a Distinguished Alumni Scholarship was established in her honor in 1994.

Distinguished Service Award

David M. Kipnis, MD, is the Distinguished University Professor of Medicine and professor of molecular biology and pharmacology at the School of Medicine. Kipnis was the Busch Professor and Chairman of the Department of Medicine for 20 years. He was a principal architect of the Washington University-Monsanto collaboration, and was instrumental in establishing Clinical Research Centers in the United States. Among Kipnis' many honors are election to the National Academy of Sciences and its Institute of Medicine, and to the American Academy of Arts and Sciences. ●



From left: Kim Gassner, Larry Gassner, MD '88, Liu Lin Thio, MD '88, and Laura Grady, MD '88, at the welcoming cocktail party.



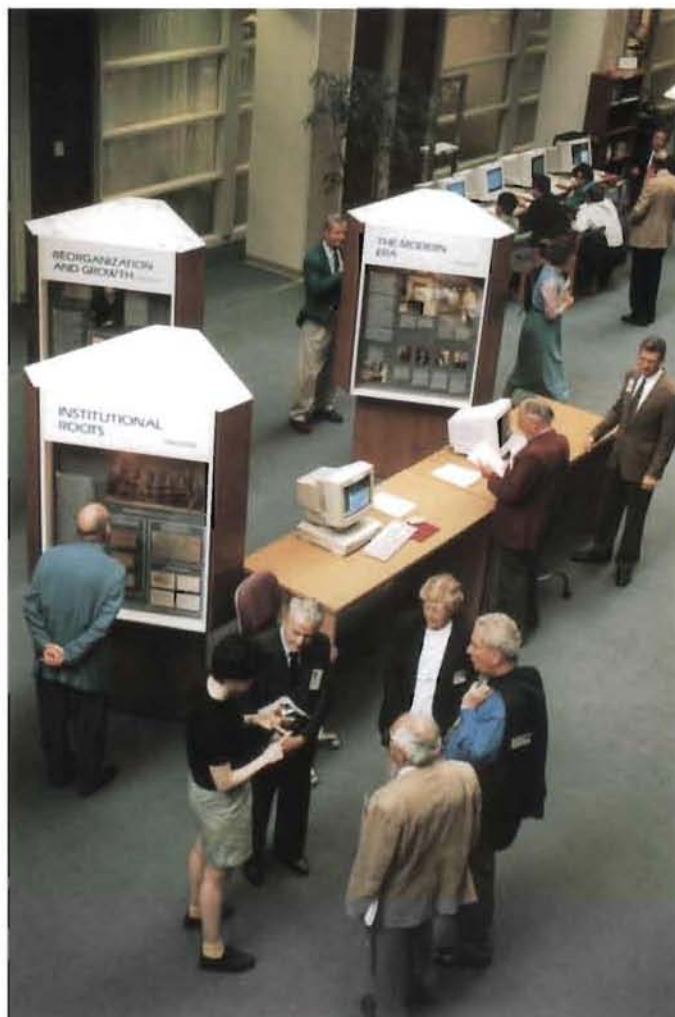
Dean William A. Peck, MD, presents WUMCAA president Barry Milder, MD '73, with a gift of appreciation for his service this past year.



From left: Charles Leonard, MD '63, Frank Norbury, MD '48, William Goettman, MD '58, and Richard Ernst, MD '53, reminisce at the portrait gallery during a tour of the school.



From left: Gary Shackelford, MD, and Penny Shackelford, MD, enjoy a story from Sonja Flatness Brock, MD, at the Class of '68 dinner.



Alumni enjoy "Info Expo" at The Bernard Becker Medical Library.



From left: Dan Morgan, MD, Nathan Groce, MD, J. Neal Middelkamp, MD, Mary Sartorius, Everett Lerwick, and Arthur Sartorius, MD, at the Class of '48 dinner.



Thomas Hubbard, MD, and Dawn Groten, MD, both from the Class of '83, dance to the music of the Hot Docs.



From left: Harlan Firminger, MD '43M, Irvin Mattick, MD, '43M, Ruth Mattick, Jane Firminger, Mary Seidler, William Seidler, MD '43M, at the welcoming cocktail party.

Due to World War II, two classes of medical students graduated in 1943, one in March (M), the other in December (D).



From left: Ross Morgan, MD, Mark Frisse, MD, and Harold Kent, MD, all from the Class of '78.



Christina Lee and Joseph Lee, MD '73, and Gloria Blythe congratulate William Blythe, MD '53, on his Alumni Achievement Award.



From left: Tim Bahr, assistant director of annual giving, Robert Brown, MD, and Cheri Brown at the Class of '83 dinner.



From left: Richard Walters, MD, Nilza Karl and Robert Karl, MD, at the Class of '73 dinner.



Donald Harkness, MD '58, speaks at the scientific program.



Barbara Reed, MD, and Marcy Gibb Hipkind, MD, both from the Class of '78, exchange a hug at registration.



From left: Dallas Anthony, MD '43M, and Paul Berry, MD '48, relax during the cocktail hour.



From left: Millie Kaufman, Robert Kaufman, MD, Melissa Richardson, and (standing) Thomas Richardson, MD, at the Class of '63 dinner.



Stanley Burris, MD '53, makes off-duty magic at the luncheon.



From left: Leon Nachenberg, Andrea Stover Nachenberg, MD, Susan Gregg Odom, MD, and Benjamin Odom at the Class of '68 dinner.



Brad T. Cookson, MD, PhD, leads the Class of '88 in exulting over its record-setting reunion attendance.



From left, foreground: Edwin Salzman, MD, Joel Siner, MD; back row: Ralph Reaume, MD, Theodore Fuller, MD, and Jean Chapman, MD, all from the Class of '53, enjoy the entertainment at the "Docs Off-Duty" luncheon.



A future Washington University alumna surveys the scene while her father Philip Reed, MD '88, waits to register.



George Broman Jr., MD, Carol Gass and Michael Gass, MD, at the Class of '58 dinner.



From left: Class of '98 members Peter Pham, MD, Richard Kasufkin, MD, Elizabeth Swider, MD, guest Tom Wagner with class member Lisa Moscoso, MD, PhD, and Nancy Chen, MD.



From left, Theodore Meiners, MD '48, Jack Ingram, MD, David Stadtner, MD, and C. Read Boles, MD, all from the Class of '43D, at the welcoming cocktail party.



Jeffrey Milbrandt, MD '78, receives the Alumni/Faculty award from Dean William A. Peck, MD, at the banquet.



Nona Nan (Mrs. Jean) Chapman, shares her singing talent at the "Docs (and Doc's Wives) Off-Duty" lunch. Ruth Bebermeyer, senior director of alumni and constituent relations, accompanies.

30s

Philip V. Dreyer, MD '36, has retired from 60 years of practice in family medicine in Huntsville MO. He and Mrs. Dreyer have been married for 63 years.

40s

Jules L. Glashow, MD '42, has a new winter home in Boca Raton FL, and says that all is well.

Louis A. Gottschalk, MD '43, Ph.D., works full time as professor emeritus of psychiatry at the University of California at Irvine, doing research, writing and seeing patients. He was awarded the University Medal in 1996, and in 1997 the Gottschalk Medical Plaza on the UCI campus was dedicated in honor of Louis A. and Helen C. Gottschalk.

James A. Jernigan, MD '49, is now retired and living in Hendersonville NC.

50s

Marvin E. Levin, AB '47, MD, '51, received the Washington University Arts and Sciences Distinguished Alumnus Award at a ceremony in Ridgely Hall on May 15. The awards are presented to alumni who exemplify the ideals embodied by an Arts and Sciences education and who have attained distinction in their academic or professional careers. A world authority on diabetes, Levin is professor emeritus of clinical medicine and associate director of the endocrinology, diabetes and metabolism clinic at the School of Medicine.

Ethelyn "Lynn" Crawford Frerking, NU '54, retired from the Diabetes Center at the University of Missouri Medical Center in Columbia on Dec. 1, 1997, to spend time with her first granddaughter born the preceding day, Nov. 30.

John R. Calvert, MD '58, retired Dec. 31, 1997, and moved to Natchez MS, where he grew up and where his 98-year-old mother still lives.

60s

Philip Korenblat, MD, HS '63-'65, is the 1997-1998 president of the CRN/Asthma & Allergy Network, Inc. The organization, a unique network of respiratory investigators, has a core membership of more than 180 clinicians in 22 states.

70s

James M. Mick, MD '70, practices general pediatrics at two locations in Arizona — at Prescott and Prescott Valley. He has been married to Francine for 28 years and they have four children, ages 25, 22, 18 and 14.

Susan Lightfoot Parry, OT '75, earned the MHS degree in OT from the University of Indianapolis in 1995.

James Reitman, MD '75, has been the military consultant for medical ethics to the U.S. Air Force Surgeon General since January 1995.

Larry Acker, HA '77, went to Shanghai, China, for two months in March to teacher graduate courses for Webster University at the Shanghai University of Finance and Economics.

80s

Susan D. Rollins, MD '84, was featured in an article in the January 1998, issue of CAP TODAY, the publication of the College of American Pathologists. The article, titled "Performing FNA Biopsies," describes the rationale and process for conducting outpatient fine needle biopsies. Rollins established the Outpatient Cytopathology Center in Johnson City TN in 1991.

Michael J. Becich, MD, PhD HS '84-'89, is an associate professor of pathology at the University of Pittsburgh Medical School. He hosted a national meeting, Anatomic Pathology Informatics, Imaging and the Internet (<http://www.pathology.p.h.edu/apiii98>).

90s

Peter Bridge, MD '93, and his wife Donna are expecting their first child this fall.

Deborah Perry Neff, OT '95, works for Nova Care, Inc., in central Florida. She was married in August 1996.

IN MEMORY

Willard Scrivner, MD '30, an obstetrician/gynecologist in Belleville IL, for 60 years, died Feb. 7, 1998, at the age of 91. He was a past president of the Illinois State Medical Society and the St. Clair County Medical Society. He is survived by his wife of 67 years, Ruth Scrivner, and two sons.

George J.L. Wulff Jr., MD '33, died Jan. 12, 1998, in Miami, where he had lived since 1977. He practiced obstetrics/gynecology in St. Louis for 40 years and was a professor at Washington University School of Medicine. His wife, Mary Evalyn Campbell Auer Wulff, two daughters and four sons, survive.

Arnold Dankner, MD '47, died of cancer Feb. 6, 1998, at his home in St. Louis at the age of 72. He had been in private practice as an allergist since 1953 and was an associate clinical professor at Washington University. He also was chief of allergy-immunology at Jewish Hospital. His wife, Jackie, and one daughter, survive.

Francis J. Catanzaro, MD '48, a retired cardiologist, died in St. Louis on Jan. 9, 1998. He had been an assistant professor at Washington University. His wife, Phyllis, survives.

Mari Duncombe Koch, MD '77, was killed in Alaska on March 20, 1998, in an accidental shooting while on a ptarmigan hunting trip with her husband and two friends. She was 46. At the time of her death, she was medical director of the eating disorder program at the Discovery Unit of Providence Alaska Medical Center in Anchorage. Her husband, Barry, survives, along with a daughter Krysten, 12, and a son Kalgan, 10.



Tim Parker Photography

Academy of Science of St. Louis honorees Leonard Berg, MD, left, professor of neurology, and Louis V. Avioli, MD, the Sydney M. and Stella H. Schoenberg Professor of Medicine and professor of orthopaedic surgery, right, received the Peter H. Raven Lifetime Awards in April. Scott J. Hultgren, PhD, associate professor in molecular microbiology, center, received the academy's Innovation Award, presented to scientists under age 40 who have exhibited great potential and/or superior achievement. Hultgren has made groundbreaking discoveries that affect treatment of bacterial infection. Avioli was honored for his research on osteoporosis; Berg is the founder and former director of the Alzheimer's Disease Research Center at the School of Medicine.



Washington

WASHINGTON · UNIVERSITY · IN · ST · LOUIS

School of Medicine

Campus Box 8508
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St. Louis, MO 63108-2259



Just say cheese is what Derek Hausladen, Ericka Hayes and Charlotte Hsieh appear to be saying in celebration of their graduation from the School of Medicine on May 15. The three were among 99 students receiving MD degrees, 17 who received MD/PhD degrees and seven who received MD/MA degrees.